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ABSTRACT

What are the primary functions of graduate education and research in the United States, and how can these functions best be performed? Areas of concern shared by all the major universities offering doctoral programs include: (1) the general assessment of the Association of Graduate Schools of the status of graduate education and the proper direction of change; (2) the prospective supply, demand, and manpower forecast for Ph.D.'s; (3) the modification of graduate education; (4) effective responses to urgent national problems through graduate education; (5) the allocation of resources to graduate education by universities, state, and federal governments; (6) the support of graduate students; (7) the resources required for high-quality graduate education; (8) the contribution of graduate education and research to the teaching of undergraduates; (9) the role of the Association of Graduate Schools in confronting the problems of graduate education; and (10) the AAU posture with respect to equal access to graduate education. (Author/KE)

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THE RESEARCH DOCTORATE

IN THE UNITED STATES

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Report of the Association of Graduate Schools to the Association of American Universities

The Research Doctorate in the United States

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Association of Graduate Schools
One Dupont Circle, Northwest
Washington, D.C. 20036

January 1976

Foreword

The Association of American Universities since its founding in 1900 has consisted of universities with a major interest in graduate education and academic research. In the 25 years following the close of World War II higher education including graduate study and research underwent unparalleled growth and prosperity. The most recent five years, however, have been witness to a dramatic shift from a growth to a no growth situation. Such periods of significant change offer a timely opportunity to take stock of the present and to plan for the future.

In this spirit of self-appraisal the presidents of the AAU institutions posed a series of issues to their graduate deans who responded with this very thoughtful report. In receiving the report the AAU presidents unanimously adopted the following resolution:

> We, the presidents in the Association of American Universities, express our appreciation to the Association of Graduate Schools for the report on the "Research Doctorate in the United States." We consider it an excellent response to our request for advice on pressing issues in graduate education and urge its prompt publication. We commend it as a document to be carefully considered by all institutions offering graduate degrees as an informed and helpful guide in future educational planning. Similarly, we recommend its careful review by foundations, industries, governmental bodies and all others concerned with graduate education.

John W. Oswald
President, Association of American Universities
President, Pennsylvania State University

January 1976

Preface

This report grows out of a request by the presidents of the member institutions of the Association of American Universities (AAU) for advice from their graduate deans on ten pressing issues in graduate education. The report thus represents a consensus of the graduate deans of fifty major universities, universities that produce the majority of Ph.D.'s in the United States and perform over two-thirds of the federally supported research conducted at American universities. The report is directed additionally to all those who are concerned about the condition of higher education in America, and in particular to those citizens—educators, elected representatives, federal officials—with specific interest in graduate education and research at major universities in the United States.

The report focuses primarily on academic research and training for the Ph.D. To the extent that other postbaccalaureate programs, including those terminating in a Master's degree, raise related problems and issues, this statement is relevant to them as well.

Most recent reports on higher education either have slighted graduate education or have stressed financial and supply-and-demand problems. Although these are important problems, and this report inevitably touches on them, they are not central to the basic questions of purpose and role we are seeking to answer here: What are the primary functions of graduate education and research in the United States, and how can these functions best be performed?

Graduate education is a vast and diversified undertaking. There are about 900,000 graduate students in the United States, or 700,000 if we convert part-time students to full-time equivalents. Most of these students aim for, and secure, Master's degrees. Some 250,000 Master's degrees, as opposed to 33,000 doctorates, are granted each year. Our report does not consider Master's-level work or professional education (the health professions, law, social work, business administration, etc.). Even with these exclusions, so many levels and fields are encompassed by our topic that we cannot address the special problems of particular fields. Our report concentrates, rather, on those broad areas of concern shared by all the major universities offering doctoral programs.

Of course graduate deans differ in their philosophy of graduate education, their perception of the present, and their aspirations for the future. Accordingly, not all fifty deans agree with every detail of this report. They do, however, support the point of view and general proposals it espouses.

Of the several recent reports on federal and state support of graduate education, the two we consider the most valuable, although we do not endorse them in every detail, are *Federal Policy Alternatives Towards Graduate Education*, (Washington, D.C.: National Academy of Sciences, 1974), and *The States and Graduate Education* (Denver, Col.: Education Commission of the States, 1975).

Although the ten questions posed by the AAU presidents served as stimulus for different sections of the report, they are so inextricably related to one another that each question is discussed in several places and each section of the report responds to several of the questions:

1. What is the general assessment of the Association of Graduate Schools (AGS) of the status of graduate education in this country and of the proper direction of change?
2. What is the prospective supply and demand for Ph.D.'s? What weight should be given to manpower forecasts?
3. If more graduates will be going into nonacademic positions, should graduate education be modified, and, if so, how?
4. In responding to urgent national problems, what considerations are involved in making effective responses through graduate education?
5. What principles should guide the allocation of resources to graduate education by universities, state, and federal governments?
6. What principles should underlie the support of graduate students?
7. What can be done to use most effectively—either within or among universities—the resources required for high-quality graduate education?
8. How can graduate education and research contribute more effectively to the teaching of undergraduates?
9. How can the Association of Graduate Schools itself play a more useful role in confronting the problems of graduate education?
10. What should be the AAU posture with respect to equal access to graduate education?

All the questions are important, and the sequence in which they are addressed has no bearing on their relative urgency.

I Continuity and Change

Graduate education, including research, is vital to the health and vigor of the nation. It produces the technicians and managers essential for the provision of health services, for the functioning of public agencies, and for the operation of a complex economy. Graduate education produces the scholars who help to form and preserve our cultural heritage, who make it possible to explore the physical and biological universe. A healthy citizenry, a productive economy, good government, an effective school system, a rich culture, new knowledge—all are fundamental needs of a dynamic society. To the meeting of those needs, graduate education will continue to make a unique contribution.

During and after World War II, graduate education responded with vigor and effectiveness to the nation's needs. Universities produced the personnel and scientific advances essential to the Allied victory in World War II. Confronted by Sputnik, the President and Congress again turned to the universities. When the college population almost tripled during the 1960's, graduate schools produced the necessary college and university teachers. In short, graduate education has been responsive to the needs of the nation in times of national need. Indeed, one of the hallmarks of our system of higher education is the concept and practice of service to society as a major university function. While recognizing the responsiveness of graduate education in periods of national crisis, it is important not to overlook its on-going contribution during periods of relative tranquility. Solutions to many national problems are derived from decades of research in our graduate programs and form the lifework of scholars educated in those programs. The basic function of the arts and humanities in particular is to examine and sustain values that transcend transient social and economic problems. The continuous creation, sustenance, and transmittal of basic knowledge is the fundamental justification for centers of graduate education.

Graduate education must now function within a troubled society and faltering economy. It must respond to the specific needs and priorities not of the past, but of the future. Some new forces affecting graduate education include:

- a decline in the rate of increase in undergraduate enrollment, leading to a decrease in the number of new academic positions over the next decade;

- pressing needs to cope with deterioration of the environment and with the complex of problems centering on energy;
- the imperative need to eliminate discrimination based on race, sex, and ethnic origin;
- demands for expansion of professional service in government, in allied health fields, in consumer affairs, and in other emerging professions;
- a reduction in the rate of increase of support for higher education, and a particularly sharp cut in public support for graduate students;
- the emergence of new groups of students including part-time and older students, who want new kinds of postbaccalaureate instruction.

The problems now facing the nation are in many respects more intractable than those of World War II, or of the moonshot. In those cases solutions were facilitated by a broad consensus that the goals were of the highest national priority and by a solid base of scientific knowledge from which technological advances could be drawn. The current problems are as social and political as they are technological. Some of our goals conflict with one another, and not all of them can be met simultaneously. In addition, what is needed to solve many of our problems is not new knowledge, but new kinds of knowledge. Today's social and economic setting requires a well-considered and effective balancing of the three tasks that graduate education naturally addresses: (1) educating men and women to the highest intellectual levels; (2) preserving and extending our cultural heritage and developing new knowledge; (3) joining in the search for solutions to contemporary national problems. The next sections consider further the problem of finding a wise balance among these.

II Meeting Immediate and Future National Needs

A. RELEVANCE IS MORE THAN IMMEDIATE PRACTICALITY

It is a serious if widespread mistake to assume that disinterested scholarship and basic research are not relevant to the problems of society. Without a strong and comprehensive basic research effort, largely centered in universities, a nation is doomed to tackling the problems of the future with the knowledge and ideas of the past. Without scholarship in all fields of learning, the United States cannot claim to be a fully civilized nation, and it will face the danger of becoming a technocratic society without the capacity for critical self-examination and self-renewal. Research and advanced scholarship are not forms of intellectual dilletantism, but rather intensely disciplined efforts, often at the frontiers of knowledge, where intuition is as important as organized search.

A major premise of this report is that graduate education makes its best and most important contribution by pursuing basic research and scholarship and training scholars who can continue that pursuit. The capacity of graduate education to serve society is imperiled by efforts to make it an instrument for quick solutions to problems recently defined as urgent. Such short-term priorities undermine the search for knowledge that will make it possible for future generations to address the problems confronting them—problems that are now either unknown or underappreciated. Moreover, a civilized society must understand its past, examine its values, cherish its poets, encourage its artists. The university is the major institution that performs these roles; it is the university scholar who does this essential work for society. Again, we are led to emphasize the need to encourage and maintain basic research and scholarship.

A second major premise of this report is that research and scholarship are valuable in proportion to their excellence with excellence defined as intellectual effort of the highest quality. During the 1960's, the major characteristic of graduate education was expansion. Over the coming decade, continuing elevation of the level of excellence must be the primary objective.

B. GUIDELINES FOR INVOLVEMENT

The two premises set forth above lead to specific guidelines for the

response of graduate education to national needs:

1. Our universities, specifically including the graduate schools, best serve society, and simultaneously assist most effectively in solving national problems, by planning and conducting educational and research programs of the highest possible intellectual excellence. The unique contribution of the universities is their capacity both to analyze the past and serve as a major instrument for society's investment in the future—an investment in new ideas and well-trained people, both indispensable to solving problems whose nature cannot be foreseen.

2. In general, the students emerging from our graduate schools will be most useful to the society over the long term if they have been soundly educated in one of the basic disciplines, but simultaneously made aware of the perishability of knowledge and of the relations between fields. A premium should be placed upon the spirit of inquiry and upon an attitude of flexibility toward eventual application of the student's abilities and experience. In general, the university system, and particularly the individual research supervisor, should encourage students in an open attitude toward the relative status of jobs outside the academic community. Increased flexibility of this kind is probably more important than curricular or structural changes in graduate education.

3. In the course of their regular graduate programs, faculty members and graduate students will often be in a position to anticipate, and call to the public's attention, emerging national problems (for example, the nature and origin of photochemical smog, threats to sources of energy) and new kinds of solutions (atomic fission and fusion as energy sources, molecular biology as a source of radically new approaches to diagnosis and treatment of disease). Universities have a special obligation to protect their capacity for the independent assessment of emerging and potential problems, especially as the rate of technological innovation increases. As the interval between scientific discovery and technological application diminishes, it is more crucial than ever that we continually monitor technology's impact on our society and environment.

4. Graduate schools have the capacity to train people for some of the specialized manpower requirements defined by government and industry. They have an obligation to provide this kind of service, but on a scale that does not convert them into training institutes as contrasted with educational institutions. They have a further obligation to reject funds for training programs inappropriate to their basic mission.

5. Some students will be exposed to urgent national problems through regular programs in university departments. A smaller proportion will secure this exposure through association with specific problem-oriented centers within the university.

6. Under some circumstances, universities can respond directly, by creating new organizations—departments, programs, institutes, or laboratories—specifically designed to bring the full array of university specialities to bear on a selected problem area—housing, the environment, population, urban problems, food and nutrition, energy, poverty. However, the creation of a new organization should be approached carefully because these efforts can be fully effective only if (a) the university vigorously exercises its continuing central responsibility to sustain the long view through basic research guided by individual investigators; (b) high standards of performance in research and teaching are demanded and effectively rewarded; (c) the new organization can depend on academic leadership of high competence, commitment, and reputation; (d) research on short-range problems involves work with substantial intellectual content; and (e) graduate students and their supervisors feel free to pursue a thesis topic with primary consideration for its intellectual development, and only secondary consideration for the direction and time limit imposed by an overall large-scale project.

The shorter a problem-oriented research proposal or special university organization falls of meeting these criteria, the greater the presumption that the appropriate setting for them is an industrial or governmental laboratory, rather than a university.

C. SHIFTING TO THE STEADY STATE

The research-oriented Ph.D., pursued full-time by students who have just completed their undergraduate work, has been the dominant mode of graduate education since its inception in this country about a century ago. Will it remain so? There are strong reasons for believing that the dramatic increase in the rate at which Ph.D.'s are awarded, which peaked in the 1960's, is attributable to a confluence of socioeconomic and political forces that will not return in the near or mid-term future. Demographic facts have led to the present leveling-off of undergraduate enrollments, which will be followed, in the 1980's, by a drop, unless a different clientele gains access to higher education. Because graduate enrollments are strongly influenced by undergraduate numbers, one can expect that, all other factors remaining constant, graduate enrollments, too, will drop. This prediction is further supported by the leveling-off of research fund-

ing and its change in emphasis, because research is the other major determinant of graduate enrollments.[1]

The explosion of undergraduate enrollments in the 1950's and 1960's meant that more graduate students were needed to assist faculty members as discussion leaders and laboratory instructors. At the same time the major expansion of university-based research required more graduate students as research assistants. The growth of undergraduate enrollments also promised employment to many Ph.D. recipients.

As total research funds stabilize and as undergraduate enrollments level-off and decline, the number of traditional—i.e., young, full-time, recently graduated—graduate students will likewise stabilize and perhaps decrease. In general, faculty members will produce fewer doctoral students in the future than they have in the past, perhaps only half as many. The number of predoctoral research assistants supported by contracts and grants may level off, and more of the kind of work they have done in the past will be undertaken by postdoctoral fellows and research associates. More attention may be paid to individual students.

The applicability of these projections will vary from field to field, depending on a multitude of individual decisions by students, universities, and society in general. Some fields will be affected less than others. The biomedical sciences and engineering for example, may experience fluctuations but will maintain and perhaps even expand enrollments. In general, however, the era of substantial year-to-year growth in full-time enrollments is behind us.

The current period of a slow increase in graduate enrollments coupled with a decrease in real terms of research funds generates both problems and opportunities. The opportunities are to assess the functions of graduate education for a future that will differ markedly from the past, and to concentrate on quality. The problems include assimilating the shift from a psychology of growth to one of stability, learning to innovate by substitution rather than expansion, and rethinking the considerations that should properly govern the size of graduate enrollments. In the last connection, we believe that the appropriate size of graduate enrollments should be determined by the free choice of individual students tempered by an awareness of career opportunities, and not by institutional needs during the comparatively brief period of graduate study.

[1]For a full discussion of issues generated by the relationship of graduate enrollments to research funds and undergraduate enrollments, see Stephen P. Dresch, "Research, Graduate Education and the University," *Educational Record*, Summer 1974 (American Council on Education, Washington, D.C.), p. 171.

D. NEW STUDENTS, NEW TASKS

As the number of traditional graduate students stabilizes or decreases, the number of nontraditional students will rise. This nontraditional clientele will include many men and women who for a variety of reasons did not become Ph.D. candidates earlier. Racial and ethnic minority students and women, now a small percentage of the graduate enrollment in many departments, will comprise a rising proportion of the graduate student population. Demographic data, social trends, changes in job requirements, political pressures, and actual enrollment patterns all suggest that a substantial and steadily expanding population of older persons with both nonvocational and vocational interests will be seeking graduate education. Many of them will have jobs in fields related to their doctoral programs and many will be part-time workers and part-time graduate students. In addition, a larger proportion of the younger students may pursue graduate studies on a part-time basis.

Taken together, the new kinds of graduate students and their special needs pose a challenge to graduate education.[2] The adaptive process will be a complicated one because the desires and needs of the new groups of students are diverse. In general, women and members of minority groups who are or will be full-time graduate students want simply a good graduate education, as traditionally defined, on a non-discriminatory basis. Many of the older and part-time students, however, will want something quite different.

If, as seems probable, substantially larger numbers of part-time students and older persons enroll in graduate programs, the effects on graduate education will be extensive and varied. Some programs will be changed. The tone of class discussions and the kinds of interaction between teacher and students may be modified. Even departments that retain traditional programs may develop alternatives for students with different career plans or nonvocational interests. At the same time, some preeminent graduate departments will continue to offer the same programs they traditionally have offered, and this will sustain the diversity from which excellence and adaptability flow.

All in all, widespread curricular changes are likely, in the context of both new and existing degree programs. The Doctor of Arts degree, despite a faltering start, or other degrees that do not require original

[2]New dimensions of graduate education and new responses to the needs are presented in *Scholarship for Society*, Panel on Alternate Approaches to Graduate Education, J. Floyd Page, Chairman. (Princeton, N.J.: Educational Testing Service, 1973).

research, may find favor among students interested in teaching rather than research careers. Many such students, however, may not seek a degree at all, but instead will study for the best of reasons—to learn or relearn. Workshops and short courses may be needed during evenings, weekends, and vacation periods. It may be heretical to suggest nonresidential programs resembling the experimental "Open University" in Britain, but the point is that eclectic approaches will be required to cope with the diverse needs of the new students.

What are the financial consequences of adapting to such needs? The costs, particularly the initial costs, may be considerable. New approaches and new curricula and courses will have to be planned and developed. The way most states compute their support for graduate education presents both incentives to adapt graduate education to new needs and constraints on doing the job properly. The basis for financing graduate education in most states is credit hours of enrollment, yet registration and counseling of the part-time student, to name only two fixed expenses, are as costly as for full-time students. Thus strict reliance on volume of instruction as the basis for support threatens not only the quality of rigorous, research-oriented graduate work but also a university's responsiveness to nontraditional students.

Difficult choices are inescapable in the next decade because legitimate needs will exceed resources. One paramount principle is that areas of excellence in existing doctoral programs should not be sacrificed.

E. HOW CHANGE OCCURS

Within any university there are many sources of initiative—and of obstruction. Similarly, decision-making authority is much more widely dispersed in a university than is ordinarily the case in business or government. Moreover, universities vary enormously in character and circumstances, so that a given change on the national scene may make one kind of response (e.g., retrenchment in a field) a reasonable one in the case of University A, and a wholly different response objectively preferable in the case of University B. These characteristics of pluralism and diversity impede the use of universities as flexible instruments of social policy. But with our prophetic capacities in their present early stage of development this is not all bad; indeed, more catastrophes may be averted than opportunities lost.

Ingenuity is required to marshall the energies and capacities of a university community for work on such problems as the maintenance of social stability and world peace and the achievement of greater

social justice. Research on such problems does not fit neatly into the departmental structure, and in many universities new organizations—generally called institutes—have been established to pursue such problems with the requisite flexibility. The extradepartmental organization, a device widely adopted in the last two decades, will continue to play a major role in the marshalling of university resources to address urgent national problems.[3]

The institute, however, is not a panacea. In section B above, we discussed the conditions under which such an organization should be established. At a minimum, the institute should be integrated with the university; it should be staffed by faculty with teaching responsibilities; and, with rare exceptions, it should not take on inteilectually inconsequential problems. In short, only careful administration will ensure that the institute is as productive in fact as it may appear in theory.

[3]For an excellent analysis of the problems of organizing for changing functions see S. O. Ikenberry and R. C. Friedman, *Beyond Academic Departments: The Story of Institutes and Centers* (San Francisco: Jossey-Bass, 1972.)

III Links between Graduate and Undergraduate Education

Graduate education produces ideas that enliven, enrich, and transform undergraduate education. This is its first and most important effect. The burst of graduate scholarship at the turn of the century revitalized the liberal arts curriculum throughout the nation. More recently, "the new math" and new discoveries in cell and molecular biology were introduced into first-year undergraduate courses. As a result, today's college freshmen are introduced to knowledge unknown to college graduates a generation ago. Area studies, computer science, and linguistics exemplify the new clusters of knowledge that develop out of graduate research programs. As new areas of study appear at the undergraduate level, they add a welcome breadth to the curriculum. In short, ideas and knowledge developed in graduate programs continually inject vigor, variety, and excellence into the undergraduate curriculum.

The processes as well as the content of graduate education affect undergraduate education. Ph.D. training stresses active, participatory learning, with the research seminar, peer teaching, and independent study as basic educational modes. These modes have been widely adopted at the undergraduate level in response to student demands for alternatives to passive lecture-listening. Today almost any college curriculum offers opportunities for independent study and research, student-initiated colloquia, honors theses, seminars, and out-of-the-classroom learning experiences. Thus the undergraduate curriculum has been enriched by adopting from graduate studies the method of having students discover for themselves what is to them new knowledge.

The relationships just noted are conceptual and procedural. They exert their influence generally, affecting undergraduate teaching even in institutions that have no graduate students of their own.

An additional set of influences comes into play where undergraduate and graduate education coexist in the same university. Having a faculty that draws directly on current research experience invigorates undergraduate instruction as nothing else can. Of course to secure the full benefits of this invigorating effect, we must see that graduate and undergraduate programs do not operate in isolation from each other.

Another potent influence is the teaching assistant. Trained well and utilized wisely, the graduate teaching assistant injects continuously renewed enthusiasm and fresh points of view into undergraduate teaching. The graduate teaching assistant can be both mentor and academic colleague to the undergraduate student. The university has both an opportunity and a responsibility in selecting, training, and supervising its graduate teaching assistants to ensure that they know their subjects and teach them well. When this challenge is met, the undergraduate, the graduate and the university all benefit.

To be sure, there are circumstances in which a university has not been well served by ill-conceived ventures launched in the name of graduate research; some of these are discussed later. We strongly believe, however, that, on balance, graduate programs have enhanced the intellectual vigor of undergraduate studies at the leading research universities.

IV Efficiency and Cost in Graduate Education

With the present extreme financial pressures on universities, graduate education must share the burden of cutting costs and increasing efficiency wherever possible. This obligation is all the greater because high-quality graduate education is inherently costly both in absolute terms and in relation to undergraduate education. Much graduate education involves direct, continuing interactions between senior members of the faculty and individual students. Graduate programs make intensive use of research instruments, computers, and libraries. Their very costliness makes it important to search for more efficient ways of using such expensive resources, and of cutting back on such resources when we can do so without seriously impairing the quality of research and instruction. Cost-consciousness and a view toward efficiency are, and will remain, prominent concerns of everyone involved in graduate education.

In view of the high cost of graduate programs and the poor long-range career prospects in some fields, the reduction or elimination of some graduate programs will continue to be a lively option in most public and private universities and in many state bodies. The process by which such decisions are made will and should differ between public and private universities, and from state to state. A few general remarks, however, seem broadly applicable.

First, retrenchment decisions should be made on the basis of explicit criteria. The following list is commended to all universities and all states:[4]

1. The quality (and accessibility) of the faculty and of the program of graduate instruction in each program, as they can be inferred from the opinion of other scholars in the field, the view of faculty members in related disciplines at the institution, and any available evidence based on the opinions and experiences of graduate students.

2. The number and quality of students who have applied for graduate study, who have accepted admission, and who have completed the program.

3. The future of the whole field of study in terms of scientific and scholarly trends and in terms of national, state, and regional needs.

[4]New York State Education Department, "Meeting the Needs of Doctoral Education: Statement of Policy and Proposed Action by the Regents of the State of New York" (Albany, 1973), p. 25 (adapted from Princeton University Priorities Committee Guidelines for 1972).

4. The national, statewide, and regional contribution of each doctoral program, viewed in the context of the number of other strong programs, whether or not they are operating below their desirable size and, in general, whether suspension of a program at the institution would have a seriously adverse effect on opportunities for graduate study in the nation, state, or region.

5. The comparative advantage of the institution in the field—that is, the ability of the institution to make a particular contribution to the field in question because of special factors such as a long tradition of good work in the subject, unusually strong library resources, and so on.

6. The interactions between graduate study in the field in question and graduate work and scholarship in other fields at the institution, and the likely effects of suspending work in the field on other programs and faculty members.

7. The interaction between graduate study in the field and the quality and variety of undergraduate offerings in the same field in the institution.

8. The costliness of work in the field, measured in terms of instructional costs, student support, library costs, space costs, and so on.

It should be noted that this list stresses such factors as the quality of programs, interdisciplinary relationships, the number and quality of students, the regional and national role of programs. Cost is an important criterion, but far from the only one. Moreover, different universities and programs will assign different weights to the eight listed guidelines.

To date the most extensive effort to assess the quality of particular graduate programs is the 1970 Roose-Andersen report for the American Council on Education.[5] This is essentially a peer rating of prestigious departments, and it contains no explicit criteria for judgment. In an effort to develop better means of measuring quality, the Council of Graduate Schools is preparing a report, "Dimensions of Quality." It will set forth explicit criteria by which quality can be assessed, and it should be extremely helpful.

The National Board on Graduate Education has suggested a useful approach:[6]

a. A single measure of quality should not be applied to very diverse programs—programs that may be serving the needs of nontraditional students for nontraditional forms of graduate education. Multiple indicators of quality, sensibly related to different program missions, should be developed.

[5]K.D. Roose and C.J. Andersen, "A Rating of Graduate Programs" (Washington, D.C.: American Council on Education, 1970).
[6]National Board on Graduate Education, *Doctorate Manpower Forecasts and Policy* (Washington, D.C.: National Academy of Sciences, 1973).

b. Statewide planners should resist the temptation to apply simplistic formulas to doctoral programs, such as "eliminate any program that has not produced more than two doctorates within the last two years." Such statistical measures may flag programs in need of review, but no program should be eliminated on the basis of simple statistics alone.

c. When evaluating graduate programs, planners should not attempt state-by-state labor market analyses, since the mobility of the highly educated is certain to confound such analyses. A more appropriate criterion, we believe, is assured access to graduate education for residents within the state (or within the region, through reciprocal programs).

In addition, the Education Commission of the States has issued a thoughtful report that offers explicit advice to states faced with the problem of assessing graduate programs.[7] The recommendations of the ECS task force include:

1. the maintenance of a plurality of support sources for graduate education;
2. the assumption by the states of primary responsibility for institutional support and by the federal government for research and graduate student support;
3. the encouragement of state and regional consortia to share resources;
4. complementary roles for institution, state, and federal government in supporting graduate education.

In addition to explicit criteria, a structure and procedure for applying them are needed. Sometimes internal university review procedures suffice, and these should be encouraged. When individual universities or campuses prove unable to make the necessary and necessarily painful judgments, procedures involving outside appraisals must be devised. New York State, for example, is reviewing graduate programs by a peer review procedure involving external consultants. The design of review procedures is a complicated and delicate task because they require apportioning the power to make sensitive decisions among faculty, university administrators, trustees, and state authorities. When external procedures are used, it is important that the affected universities retain the greatest possible leeway to work out details.

Universities must anticipate conditions of stability or contraction in

[7]Education Commission of the States, *The States and Graduate Education*. Report No. 59, (Denver, Col.: 1975).

many areas. No one expects the administrative, financial, and human problems involved in adjusting to these circumstances to be solved without travail; the problem of program contraction in graduate education is no exception.

On both educational and financial grounds, we wish to caution against the wholesale elimination of graduate programs in response to budgetary pressures. In educational terms, in the liberal arts and sciences, for example, reduction of graduate programs below a dozen or so key disciplines at any institution will impoverish the entire graduate effort because of the interlocking nature of knowledge. Moreover, the absence of graduate instruction in a broad array of fields can damage undergraduate education. In financial terms, elimination of graduate programs will not reduce expenditures very much unless the faculty positions associated with the programs are also eliminated because salaries typically account for about 80 percent of the costs of graduate programs. Further, this could be a pound-foolish economy because the faculty positions eliminated would be lost to undergraduate programs as well.

On the other hand, new graduate programs should be established only after a searching review of the capacity of the faculty, the place of the new program in the academic life of the university and of the region, current and prospective costs, and the prospects for adequate funding, including research funds, and for demand for the Ph.D.'s produced by the program. In connection with financing, those who must approve new programs should examine with extreme skepticism and competent outside advice any claim that a new graduate program can be established at little or no cost.

There are ways, short of eliminating graduate programs, of reducing their cost, all of which warrant vigorous exploration. In many cases the result is not only lower costs, but higher quality. We list a few such measures below.

Regional consortia allow universities to use their resources more effectively. The Committee on Institutional Cooperation (CIC), the Western Interstate Commission on Higher Education (WICHE), the Southern Regional Education Board (SREB), and the Mid-America State Universities Association are cases in point. They form the administrative framework within which various resource-sharing arrangements can be worked out. Similarly, many universities have paired off, to the advantage of both institutions. Stanford and Berkeley routinely allow graduate students from either campus to enroll in courses at the other. No money changes hands; each request is treated individually and requires only the approval of the two graduate deans. The program has allowed small but steady streams

of graduate students to profit from specialized offerings not available on their home campus. The University of Nebraska sends students in veterinary medicine to the University of Missouri; a reverse flow occurs in architecture. Numerous arrangements of this sort exist. Before a university inaugurates a new graduate program, it should canvas the possibility of cooperation with other universities.

Exchanges of faculty have a high potential both for elevating academic standards and for saving money. Visiting scholars can supplement regular faculty members at considerably lower costs than additional full-time appointees. The practicality of such arrangements has been demonstrated by many formal and informal exchanges with the traveling-scholar plan of the Committee on Institutional Cooperation in the midwest an outstanding example. As the size of faculties levels off, faculty exchanges should become substantially more prevalent. They will contribute even more to faculty vitality than to financial solvency.

The pooled use of expensive equipment at national laboratories by a large number of universities has become a way of life, particularly in physics but in other disciplines as well.

In principle the extradepartmental, problem-oriented organization (e.g. the institute) permits a more efficient, hence less costly, use of university resources. In practice, however, costs usually increase rather than diminish. The gains from nontraditional arrangements are intellectual, not budgetary.

The adaptation of advanced technology in such forms as electronic procedures in the library, large computer networks, and teaching devices of various kinds holds the potential of cost savings. But there is ample experience to show first, that it is in practice often difficult to make advanced systems work adequately, and, second, when they do work the primary effect is to increase use and efficiency rather than to reduce overall costs.

Two general observations on cost-cutting: First, graduate education, particularly for the Ph.D., is inherently and ineluctably expensive relative to non-research-oriented undergraduate education because it is so labor-intensive. That is, the investment of senior faculty time per graduate student must be high. Since salaries comprise about four-fifths of the cost of graduate education, the opportunities for cost reduction within existing programs are limited. Economies are more likely to result from the pooling of resources and from rigorous review of proposed graduate programs. Second, the graduate dean should always have a hand in the devising of interinstitutional arrangments because almost invariably they involve matters affecting the total graduate enterprise.

In practice, planning and establishing such programs involves a complex sharing of functions. In most cases the university's highest-level administrators must take the initiative in launching such efforts because institutional goals and resources are at stake. A viewpoint transcending that of individual departments and even of the entire graduate school is indispensable. If the administration's initiatives are to be fruitful, the general officers involved must be perceptive, interested, informed, imaginative, and somewhat assertive. At the same time, men and women who must actively participate in these arrangements—ranging from individual faculty members to department heads and deans—must also be somewhat assertive to ensure that the arrangements have solid academic substance and that they take into account the realities of demands on faculty time and energy.

V The Graduate Student: Jobs, Careers, Free Choice & Planning

A. INDIVIDUAL CHOICE

The informed free choice of individual students, rather than a national plan based on manpower forecasts, should be the primary determinant of graduate enrollments. Most fundamentally, the substitution of a governmental decision for a private one on something as personal and important as education would violate our tradition of individual choice in a free society. On a more pragmatic level, manpower forecasts are not accurate enough to be given such weight. As noted below, they may usefully be taken into account by the student faced with a career decision, but they *are* too unreliable to be the basis of a national quota system, even were such a scheme acceptable. (Errors in earlier projections should serve both as a stimulus to refinement of forecasting techniques and as a warning against relying too heavily on future forecasts.) Finally, we believe that the most intelligent and highly motivated students should be free to pursue advanced education in their chosen field irrespective of job projections.

B. BLEAK OUTLOOK FOR ACADEMIC PLACEMENT

The foregoing remarks should not be taken to mean that students and departments can blithely ignore forecasts of supply and demand. The number of new academic positions expected in a given field should receive particular attention because, of all aspects of the job market, this is the most firmly predictable. The outlook in many fields—notably the arts and humanities—is bleak indeed.

Students seeking a doctorate in preparation for a career in research and teaching should understand that competition for academic positions will be fierce. Those who elect to pursue graduate study nonetheless should be welcomed for their disinterested dedication rather than denied the opportunity for advanced study.

The future job market has implications not only for government policy and students' career choices but also for the content of graduate education. Students will have to be prepared for new careers, and this need raises the questions discussed below.

C. GRADUATE EDUCATION AS CAREER PREPARATION

Graduate education consumes scarce resources, requires heavy subsidies, and is usually designed to impart the skills and knowledge required to perform satisfactorily in a defined field. (Graduate education may also, like education in general, help prepare students to meet their obligations as citizens in society and to lead richer and more satisfying lives; but these are by-products, and not a primary justification for public support of graduate education.)

Accordingly, if it appears that a high proportion of those with Ph.D.'s in a given field will have careers that do not draw on their full skills, the proper policy course is to publicize the prospect and to restrict the categorical public subsidy in that field. This has happened, and properly so, painful though it has been for students and graduate departments.

There is not a general glut of Ph.D.'s. The long-range career prospects for chemists, geologists, and engineers, for example, are good. On the other hand, the long-range prospects in the arts and humanities are relatively poor. The situation must be carefully assessed field by field and not glibly or globally. The possibility of unforeseen developments that will overturn the most careful and detailed projections must always be borne in mind. This possibility is one reason why highly qualified, highly motivated students should not be barred from the field of graduate study that most appeals to them, however dim the general career outlook appears.

D. SHIFTS IN GRADUATE ENROLLMENT

From 1970 to 1974, the number of graduate students enrolling for the first time increased on the average by 4.5 percent per year, despite the bleak job outlook in academia and the uncertain prospects for suitable nonacademic jobs.[8] There have been some shifts in fields of graduate study in response to changes in perceived needs and opportunities. Enrollment in the health fields and the applied social sciences, for example, has increased both relatively and absolutely.[9] At the same time, enrollment in the humanities has not fallen off, despite poor career prospects. In education, graduate enrollments

[8] Council of Graduate Schools and Graduate Record Examinations Board, *Enrollment Survey* (Princeton, N.J., 1975), and similar publications for previous years.

[9] National Board on Graduate Education, *Comment on Newman Task Force Report on the Federal Role in Graduate Education* (Washington, D.C., 1973).

continue to increase rapidly while prospects for teaching jobs at all levels decline rapidly.[10] Much of the increased enrollment appears to be the result of defensive credentialing—that is, by teachers seeking to stave off dismissal by securing a Master's or doctorate in education. Some of the new graduate enrollment may be attributable to the present high levels of unemployment, particularly among young people. When the necessary funds are available, advanced study seems preferable to enforced idleness from both the student's and society's points of view.

Total graduate enrollment and distribution by field will continue to be governed by a complex mix of motives, opportunities, needs, perceptions of the future, and levels of unemployment, as well as by changes in the values and choices of college graduates, the capacity of colleges and universities, and federal and state policies with respect to financial support for higher education. Our preference is to let these forces operate, fearing that any effort to control enrollment in accordance with superficially plausible criteria is likely to have some disastrous consequences.

E. NONACADEMIC POSITIONS

Universities have long assumed that the responsibility for defining career preparation for graduate students was theirs alone. This position is appropriate so long as the careers for which students are being trained—teaching and research in universities—are essentially identical to those of the trainers. But when the potential jobs are of a very different character, traditional preparation will prove inadequate; university teachers, no longer useful even as role models for many students, will have to seek outside assistance in redefining appropriate career preparation for their students.

In fields that have traditionally trained substantial numbers of Ph.D. recipients for nonacademic positions, e.g. engineering, the need for such outside help has been widely recognized. In these fields graduate program directors may simply pay careful attention to guidelines established by regional or professional accrediting organizations, or by professional societies. In some instances there are also formal mechanisms, such as visiting committees composed of alumni and other interested persons in industry, through which external advice on career training can be sought. In some instances in

[10] Council of Graduate Schools and Graduate Record Examinations Board, *Enrollment Survey* (Princeton, N.J., 1975), and similar publications for previous years.

which a university has established a cooperative program in engineering or one of the sciences with a nearby industrial concern, industry representatives have been directly involved in planning the graduate program. There is an obvious need for prudence in such arrangements; curricula must not be so closely tailored to the requirements of a particular industry that education for the Ph.D. becomes a manpower-training program rather than a fundamental learning experience.

Might analogous arrangements be devised for the humanities? A search for analogues may prove largely futile, though it seems likely that the search itself might produce ideas for modifying graduate programs in at least potentially fruitful directions. External contacts would also help departments in advising potential students about the spectrum of employment opportunities in a given field. A few English departments have benefited by increasing interaction with department chairmen in nearby community colleges and by instituting formal advisory councils on the model of their colleagues in engineering and the sciences. Each discipline, and ultimately each department, should try to discover whether there is a nonacademic market for Ph.D. students trained, in whatever novel ways, in its field. For some fields, the answer may well be negative. In these cases, decreases in Ph.D. enrollments may be in order once due weight has been given to informed student decisions.

F. ADVICE TO GRADUATE STUDENTS

Whatever the forecasts for future employment, academic or otherwise, and whatever the range of error in these forecasts, it is incumbent on graduate schools to share this information as completely and frankly as possible, with both current and prospective graduate students. Different departments, at different universities will have differing recent experience in placing their Ph.D.'s. The figures should also be provided with the best possible estimates of future job prospects for those who complete the Ph.D. program of a specific department. If a department believes that recent experience is an inappropriate, irrelevant, or misleading guide for the future it should make its reservations explicit in the materials sent to prospective students. We believe that graduate faculties have the ability, and the responsibility, to provide prospective students with the best available employment information, including appropriate cautionary notes and references to other sources of information. Similarly, we believe that graduate students have the ability and the interest to evaluate such information and to make an intelligent personal decision with respect to their

plans for doctoral education.

We emphatically recommend that every department should include in the information sent prospective graduate students a clear statement of its recent experience with job placement and its expectations for the future. The appendix contains one such statement.

In addition, every professional group, including its academic members, should review the prospective demand and supply in its field and advise the academic community accordingly. This has been done, for example, by the Committee on Astronomy Manpower of the National Academy of Sciences.[11] Faced with the firm prospect of a serious oversupply of astronomers and astrophysicists, the Committee has formally recommended:

- that each university department producing Ph.D.'s with a specialization in astronomy and astrophysics "assist in achieving a reduction in their output of Ph.D.'s."

- that regular faculty members assume some of the teaching responsibilities now handled by graduate students so as to lessen the need for such graduate students.

- that universities develop programs to make the Ph.D. astronomer more attractive to small colleges and industry, where management often considers astronomers as little more than useless "star-gazers."

- that the American Astronomical Society launch a drive to increase the number of undergraduate astronomy programs at junior colleges, colleges, and universities, thereby providing more faculty positions for astronomers.

The precise recommendations are probably unique to astronomy, but the principle of a careful assessment of the future and the formulation of appropriate recommendations is generally applicable.

[11] Astronomy Manpower Committee of Committee on Science and Public Policy, *Employment Problems in Astronomy* (Washington, D.C.: National Academy of Sciences, 1975).

VI Principles Underlying Support of Graduate Students

A. SUPPORT OF GRADUATE STUDENTS—WHY AND HOW?

Support for graduate students falls into four general categories: fellowships, which are in effect gifts; teaching and research assistantships, which provide support in part for services rendered; loans; and personal or family resources. The use of each of these sources of income rests upon a particular conception of the role performed by graduate education and the distribution of its benefits.

Foremost among the reasons for the financial support of graduate students is the universities' and society's commitment to the creation and dissemination of knowledge. As a faculty strives to discover and transmit knowledge, it must at the same time educate the scholars of the future. This implies the provision of financial support so that some of the very brightest students can pursue the arduous course of graduate training in their chosen field. We support the recommendation of the National Board on Graduate Education that the federal government provide 2,000 merit-based fellowships to be awarded competitively each year.[12] A similar recommendation for 10,000 fellowships was recently presented by the Carnegie Council on Higher Education.[13] Such a program would encourage, identify and reward excellence in scholarship and would, by supporting a small number of the best students, ensure a continuing infusion of highly educated men and women into our civilization.

A second basis for student support is well known and widely accepted—the creation of highly trained manpower to meet specific national needs. Categorical graduate support programs in areas of national concern should continue to be used, primarily by federal agencies, to attract students to particular fields. Together the first and second principles produce a system of graduate student support that combines free choice of field for the student and encouragement to enroll in nationally designated fields. This mix of student choice and designated fields is sound.

[12] National Board on Graduate Education, *Federal Policy Alternatives Toward Graduate Education* (Washington, D.C.: National Academy of Sciences, 1974)

[13] Carnegie Council on Higher Education, *The Federal Role in Postsecondary Education* (San Francisco: Jossey-Bass, 1975).

Just as it is important for society to train the very best young minds to the limits of their ability, so is it important to the individual institution to attract some of the finest students to its own programs. This third principle leads individual universities to devote a share of their resources to financial aid designed to attract such students.

Finally, both individual institutions and society are committed to the principle that every qualified student should be able to pursue advanced training as far as talent will allow him or her to go. This principle is in fact tempered by another: society tends to support only as many students as will be able to pursue careers relevant to their advanced training. The interaction of these two principles, though not translatable into firm numbers, produces generally rational levels and changes in levels of enrollment. When it appears that the number of Ph.D. holders in a field greatly exceeds the number of appropriate job openings, the level of support from society tends to drop, and the level of ability required to receive support tends to rise. This is what has happened in many fields over the past five years.

There is one more important component of the design—the principle of self-interest, which accounts for the substantial contribution by graduate students and their families. Students and their spouses contribute the largest single share of the cost of their graduate education. Students earn less than they would if they were not studying, and those who study full time forgo the entire amount they could otherwise earn. All in all, students themselves bear the major part of the true economic cost of their graduate education.

Loans are a reasonable component of graduate student support. Heavy reliance on loans is inappropriate, however, in fields where advanced training does not add much to lifetime earnings. Moreover, excessive reliance on loans tends to discourage students who are wary of borrowing or have already borrowed heavily as undergraduates.

Universities have long recognized the importance of training their graduate students to be teachers. Often such training takes the form of graduate student participation in undergraduate teaching. Ideally this arrangement allows for carefully supervised training in teaching for the graduate student and more personalized attention for the undergraduate while, as a byproduct, providing an important source of financial support for graduate studies. In some places, however, the system has been abused. Where pay is substandard, graduate students are exploited; where their teaching is substandard, undergraduates are short-changed. Every university that uses teaching assistants should periodically review the system to ensure that it approaches the ideal. On balance, the teaching assistantship, has been

helpful to undergraduates, to graduate students, and to universities. Graduate students are generally competent teachers. In general the choice has been not between graduate students and faculty as teachers, but between graduate students and nobody.

Research assistantships, too, promise a happy convergence of several important goals. By assisting faculty members engaged in research, graduate students receive the training in research techniques that is a necessary part of education for the Ph.D. At the same time, they make real contributions to the research projects with which they are associated and are accordingly supported in their graduate study from funds for those projects.

Care must be taken, that the important contribution teaching and research assistants make to the institutions not obscure the fundamental reason for their presence. The size of graduate programs must not be determined solely by needs for undergraduate teachers or assistance in large-scale research projects. The graduate dean is in a unique position to keep the overall end in view, and it is important that he or she be involved in decisions about funds for teaching and research assistants.

B. SHOULD FINANCIAL NEED AFFECT THE LEVEL OF STUDENT SUPPORT?

As we consider how financial need should enter into decisions on support for graduate students, two salient points from the above analysis should be borne in mind. First, the answer will vary with the source of funds in accordance with the rationale underlying that category of support. Second, no coherent policy on graduate student support and the relevance of need can be implemented within a university unless all sources of funding are subject to central review and control. In most cases the dean of graduate studies is the natural person to exercise such authority.

For state and federal fellowship programs designed to attract the very brightest students either to graduate study in general or to particuliar graduate programs, a student's financial standing is not relevant. When distributing a limited number of fellowships to those who prove themselves the most able in national competition, the federal government properly ignores questions of financial need. A particular institution may similarly choose to attract outstanding students to its best programs, by concentrating its funds in areas of strength and ignoring questions of need.

On the other hand, an institution may legitimately take the view that it should distribute its limited resources in a manner that enables the

largest number of qualified, motivated students to pursue the arduous course of graduate education. In such cases financial need is a proper criterion for aid.

Where a university or department awards fellowship aid in the light of financial need, the integration of these awards with assistantships in the same department requires attention. It is unwise to award fellowships to the more needy students and assistantships to the less needy—or vice versa. One successful plan has been to require from all students in a graduate program a fixed amount of teaching, with the amount being set in terms of desirable career preparation, and no student being permitted to teach any more or any less. The required teaching is compensated at standard rates. Additional aid, when need is demonstrated, comes from fellowship funds.

Our general judgment is that every university should keep a careful eye on its student support policies, and that a strong case can be made for exploring in detail the relevance of financial need to every form of aid. We recommend that all universities put together a financial aid package that is consistent with the kinds of support available and with the students' financial need and personal circumstances as well as with their scholastic ability and career goals. Under such an arrangement, the extent to which need affects the amount and kind of financial aid will continue to vary widely from field to field and university to university. This is not objectionable. What matters is that financial aid decisions be based on reasonable criteria consistently applied within each institution.

C. A GENERAL ASSESSMENT OF THE SYSTEM

Given that support for graduate students springs from so many different rationales, serves so many different functions, and is distributed within universities with so little coherent policy, it is not surprising that on occasion the fundamental purpose of it all gets lost. A particular research supervisor may come to regard students as a captive labor pool; some students may themselves mistake their role and their mode of support as a kind of career or job. Some departments refuse to accept students unless they come with full fellowship support from outside sources, a policy with little social justification. The cumulative effect of these diverse practices is in many universities a nonsystem of student support that can be justified only on the grounds that it exists. All in all, graduate student support policies would be more logical, equitable, and economical if there were a greater degree of institutional awareness, and prompt action to correct anomalies. This requires a central mechanism with university-

wide authority to review current practice, consider the underlying issues, and make generally binding decisions.

The present extraordinarily complex system of support for graduate study is a sound one to the extent that it results in diversity of support by field, in diversity in the sources of support, and in a reasonable degree of responsiveness to the needs of society. The system is deficient in that support for students fluctuates violently, support for the institutional base on which graduate education rests is meager and volatile, the component of support allowing students free choice of field is inadequate, and the capacity of some institutions to define and administer student support policies is weak.

VII Access to Graduate Education

Students of comparable academic ability should have equal access to graduate study and equal opportunity to complete their degree, irrespective of sex, race, origin, or economic status. One major reason for supporting graduate students is to make it possible for qualified students, whatever their background, to undertake and complete a program of graduate study. Graduate study should be available to all highly qualified and motivated men and women, not just the financially and socially favored.

There are compelling moral, legal, and pedagogical reasons for positive action to attain these goals. Efforts to recruit minority students for graduate work should be intensified. Fellowship funds for minority students are urgently needed; institutional resources for this purpose have been stretched to the limit. The current efforts to establish formal faculty exchanges between predominantly black institutions and large universities should be extended as a means of enlarging the pool of qualified and motivated black students. Additional state and federal funds are required. Particular attention must be given the counseling of minority students, on both academic and financial matters. A more heterogeneous population of graduate students will have important educational benefits for all students, for the faculty, and for the world of learning.

After all reasonable steps have been taken, there will remain the reality that the pool of minority students qualified for graduate work is limited in size by the extremely difficult financial situation of most predominantly black institutions, and by widespread deficiencies in the elementary and secondary education of a substantial proportion of minority students. In the long run, minority students will complete advanced degrees in appropriate numbers only as they gain access to higher quality education from early childhood on.

The situation of women is different. The problems lie not in the area of preparation or recruitment, but in the area of equal access to financial aid and jobs and equal treatment as individual students.

An important short-range problem is the paucity of data. A number of organizations are analyzing and distributing more reliable data than has previously been available on the sex, race, and ethnic origin of graduate students and recipients of advanced degrees, drawing heavily on reports of the Commission on Human Resources of the National Research Council. This information is essential to asses-

sing the current situation, identifying problems, and defining the pool of advanced degree holders available for faculty appointments.[14-16]

The pipeline leading from elementary schools to Ph.D.'s and faculty positions is a long one. The number of disadvantaged and minority persons on our faculties is limited by the number of graduate degrees awarded these groups, which in turn depends on the efforts both of graduate schools and of other levels of education. The most important long-range problem in eradicating discrimination is to eliminate it simultaneously from all levels of the educational system.

[14] National Board on Graduate Education, *Minority Group Participation in Graduate Education.* (Washington, D.C.: National Academy of Sciences, to be published)

[15] E. H. El-Khawas and J. L. Kinzer, *Enrollment of Minority Graduate Students at Ph.D. Granting Institutions.* (Washington, D. C.: American Council on Education, 1974)

[16] Commission on Human Resources of the National Research Council, *Minority Groups Among United States Doctoral Level Scientists, Engineers, and Scholars, 1973* (Washington, D. C.: National Academy of Sciences, 1974)

VIII Concluding Remarks

Graduate schools occupy a unique educational role. They strengthen our colleges and universities; they enable talented men and women to pursue their interests and education to the limits of human knowledge. Most important, they perform three functions vital to a healthy society: through research, they advance human knowledge; by training scholars, they preserve and transmit our cultural heritage; and by virtue of both of these, they contribute to the resolution of national problems and needs.

The past two decades have seen a flourishing of our graduate schools that leaves them strong and healthy today. But there are strong pressures for change, many of them in the direction of contraction. The recent training of enough scholars to double the size of college faculties in the United States, the intense financial pressures on our universities, the prospect of diminishing numbers of 18-22 year olds—all these are forces favoring contraction. At the same time, new constituencies and new fields of knowledge will cause expansion in some areas. The prospect is for an overall net reduction in the size of graduate schools, with some selective growth. These changes will occur within an extraordinarily diversified, decentralized enterprise operating under severe economic constraints.

The complex problems of adjustment will introduce great strains and require painstaking choices. Inherent in the adjustment process are the dangers of over-response, of facile adaptation, of underemphasizing the things universities do best, and of neglecting the long-range contributions of scholarship. Equally inherent are the dangers of sluggishness and tradition-bound rigidity. The task confronting graduate education is one of balancing, weighing, discriminating, and choosing under pressure. It would be simpler if one could accept unreservedly the view often presented with great fervor and enthusiasm, that the university's primary role is as vanguard for the immediate felt needs of society, or alternatively, the view that as the home of the disinterested search for pure knowledge, the university should take no part in the effort to solve mundane problems. Both views reflect a single aspect of the truth; the problem is balance. Given the predilections of our society, our pragmatism and impatience for immediate solutions, the factor in the balance that we must nurture most protectively is fundamental scholarship and basic research.

Graduate education is too important to the nation for any of those

involved to let the inevitable changes occur without their participation. For the next decade the directions of change must be determined jointly by state and federal governments, administrations and governing boards, faculties, students and alumni, and donors, both institutional and individual.

Graduate education in the United States is not a monolith. Its strength rests on a diversity of responses to today's social and intellectual challenges. Even among the major research institutions constituting the Association of American Universities, responses will vary. Some of our outstanding departments will best serve society by continuing to do what they have always done well—running full-time doctoral programs oriented toward basic research. Other departments will change substantially to accommodate new constituencies. Yet others will offer both traditional doctoral programs and other kinds of programs for students interested in graduate education. We will see the emergence of entirely new problem-based structures for graduate education and research.

Pluralism and reliance on individual decision-making are prominent features of the American scene, not least in higher education. Their efficacy is dependent upon the presence of reliable information. We call for the development and dissemination of the following kinds of information:

1. internal quality assessments of departments and programs in systematic, periodic reviews by visiting committees, for example;
2. information about placement of recent graduates, compiled and published by individual graduate programs;
3. manpower forecasts as a guide to the prospective student;
4. external quality assessments of departments and programs by field, on a regular periodic basis, using methods, which remain to be devised, of greater validity than reputation surveys.

Improved information should confirm the inexorable necessity of change, however painful it will in many instances be. The guiding principle must be an overriding insistence on improved quality, an insistence that implies, inevitably, the prompt termination of weak programs. In most, though not all, fields, academic positions for Ph.D. recipients will be scarce; the nonacademic job picture varies markedly from field to field. Prospective graduate students must be given the most accurate available information about job prospects in their intended field. Although the most able and motivated students should be free to matriculate in doctoral programs irrespective of

employment forecasts, graduate enrollments should not be inflated in response either to the need of an institution for undergraduate teachers or to the availability of research funds.

Above all, successful and creative accommodation of inevitable change calls for cooperation, readiness to release our grip on even the recent past, and, once again, an insistence on quality. Men and women on the campus must recognize that governments and governing boards cannot and will not shirk their obligation of accountability. In return, members of boards and government agencies must recognize that their decisions will be the wiser for incorporating the knowledge of faculty, deans, and campus administrators. Graduate education can only profit if everyone concerned recognizes that the hard decisions ahead are shared burdens, and that cooperation brings the promise of a better, though altered and probably smaller, graduate enterprise a decade from now.

Appendix

Information Given Applicants for Admission to Graduate Study in History at Stanford University

The Job Market for Historians

We want to add a cautionary word about the professional prospects of young historians. Anyone beginning advanced study in history today should realize that he or she faces not only important intellectual challenges but also a severely restricted job market and strong competition for the available teaching positions. Nationally, it seems clear that teaching opportunities in higher education will be quite limited for the next five to ten years. The situation may vary among the fields of history, but in no established field is the outlook good. A nationwide survey conducted by the American Historical Association in the fall of 1973 found that, in departments reporting to the survey, 55 percent of the graduate students who actively sought employment for 1973-74 had been placed in history-related jobs. This survey also predicts that nationally the ratio of applicants to jobs for 1974-75 will be more than four-to-one. To date the History Department at Stanford has a strong record of helping its finishing students obtain teaching positions. Seventy-five percent of those seeking employment for 1973-74 were placed (80 percent of those with completed history Ph.D.'s, 72 percent of those who had not yet completed all requirements for the degree), and 25 percent failed to find suitable positions. However, this strong record ought not to obscure the fact that the task of placing students is likely to become more difficult for us in the years ahead, and we want to bring these facts to your attention.

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